

SUPPORT FOR THE AMENDMENTS

This Amendment amends Claims 66 and 75. No new matter would be introduced by entry of the amendment.

Upon entry of the amendment, Claims 66-91 will be pending in this application. Claims 66 and 75 are independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

The present invention provides multilayer structures each including a liquid-crystalline layer and a non-liquid crystalline layer containing IR- or UV-absorbent or fluorescent dyes or pigments. The multilayer structures provide counterfeiting-proof markings that, in daylight, viewed from the film side, only exhibit a single color impression, which is dependent on the viewing angle. Only through the use of an IR or UV lamp and possibly appropriate viewing equipment (e.g., an IR camera), does additional identification hidden in the multilayer structure become visible. See, e.g., specification at page 47, lines 30-39 and page 48, lines 1-6.

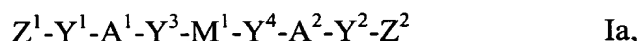
Claims 66-91 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,798,147 ("Beck").

Beck discloses a process for coating and printing substrates with a composition comprising a₁) a chiral liquid-crystalline monomer having *two polymerizable groups* and b) a polymeric binder and/or monomeric compounds which can be converted into the polymeric binder by polymerization. Alternatively, Beck's composition comprises a₂) an achiral liquid-crystalline monomer having *two polymerizable groups*, b) a polymeric binder and/or monomeric compounds which can be converted into the polymeric binder by polymerization,

and c) a non-liquid-crystalline chiral compound. See, e.g., Beck at column 29, lines 34-53. Beck discloses layer-by-layer application of a plurality of coats of Beck's liquid-crystalline composition. Beck at column 17, lines 50-52.

However, with respect to independent Claim 66, Beck fails to suggest the limitations of a "process ..., which comprises: i) applying to said substrate ... a liquid-crystalline composition ..., and ii) applying at least one further non-liquid-crystalline print or at least one further non-liquid-crystalline coating". Because Beck fails to disclose the independent Claim 66 feature of a **multilayer** structure including a liquid-crystalline layer and a non-liquid-crystalline layer, Beck fails to anticipate independent Claim 66.

Furthermore, with respect to independent Claim 75, Beck fails to suggest the limitations of a "liquid-crystalline composition comprising A) a liquid-crystalline mixture comprising A1) ... at least one compound of the formula Ia

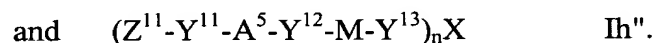


and at least one compound of the formula Ib



where ... Z^1 to Z^3 are polymerizable groups, ...and

A2) at least one chiral compound selected from the group consisting of



The Final Rejection states:

Examiner reiterates that formula I at the top of column 3 of Beck is the exact formula [Applicants' note: formula Ia] for the liquid crystalline materials sought by applicants. Furthermore the chiral additive of A2 is depicted in formula III of column 10 wherein the chiral compound preferably carries at least one polymerizable group in addition to the two maintained by the liquid crystal component. Final Rejection at page 8, lines 12-16.

The formula III of column 10 of Beck is " $(Z^1-Y^1-A^3-Y^2-M-Y^3)_nX$ ", which corresponds to Applicants' formula 1h (i.e., " $(Z^{11}-Y^{11}-A^5-Y^{12}-M-Y^{13})_nX$ "). However, Beck's formula III with Y^3 fails to disclose the independent Claim 75 formula 1b (i.e., " $Z^3-Y^5-A^3-Y^7-M^2-P$ ").

Because Beck fails to disclose the liquid-crystalline composition of independent Claim 75 comprising a liquid-crystalline mixture comprising A1) at least one compound of the *formula 1a* having two polymerizable groups and at least one compound of the *formula 1b* having **only one polymerizable group**, and A2) at least one of the recited *chiral compounds*, Beck fails to anticipate independent Claim 75.

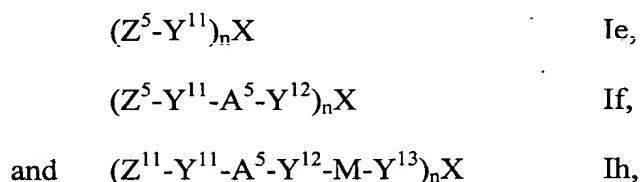
Because Beck fails to anticipate independent Claims 66 and 75, the rejection over Beck should be withdrawn.

Claims 66-68, 70-79 and 81-91 are rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,217,792 ("Parri").

Parri discloses liquid-crystalline materials comprising chiral dopants of the formula $R^1-X^1-MG^1-G-MG^2-X^2-R^2$, where R^1 and R^2 are straight-chain or branched alkyl radicals with up to 25 C atoms that can be unsubstituted, mono- or polysubstituted by halogen or CN. Parri at Abstract; column 3, lines 15-18; column 22, lines 2-6. Parri discloses coating the liquid-crystalline materials onto a substrate. Parri at column 13, lines 36-28.

However, with respect to independent Claim 66, Parri fails to suggest the limitations of a "process ..., which comprises: i) applying to said substrate ... a liquid-crystalline composition ..., and ii) applying at least one further non-liquid-crystalline print or at least one further non-liquid-crystalline coating". Because Parri fails to suggest the independent Claim 66 feature of a **multilayer** structure including a liquid-crystalline layer and a non-liquid-crystalline layer, Parri fails to anticipate independent Claim 66.

Furthermore, with respect to independent Claim 75, Parri fails to suggest the limitations of a "liquid-crystalline composition comprising A) a liquid-crystalline mixture comprising A1) ... , and A2) at least one chiral compound selected from the group consisting of



in which the variables Z^5 and Z^{11} are polymerizable groups".

In Parri's formula $R^1-X^1-MG^1-G-MG^2-X^2-R^2$ the R^1 and R^2 groups (corresponding to Applicants' Z^5 and Z^{11}) are not polymerizable (see Parri at column 1, lines 7-16; columns 7-8). Thus, Parri fails to disclose the independent Claim 75 limitation that "the variables Z^5 and Z^{11} are polymerizable groups" and fails to anticipate independent Claim 75.

Because Parri fails to anticipate independent Claims 66 and 75, the rejection over Parri should be withdrawn.

Claims 66-67, 69-75, 77-85 and 87-91 are rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,291,065 ("Poetsch"). In addition, Claims 68, 76 and 86 are rejected under 35 U.S.C. § 103(a) over Poetsch.

Poetsch discloses pigment flakes produced by coating a chiral liquid-crystalline material containing a dye onto a substrate, removing the substrate, and grinding the liquid-crystalline material into small particles. Poetsch at Abstract; 4, lines 25-40.

However, with respect to independent Claim 66, Poetsch fails to suggest the limitations of a "process ..., which comprises: i) applying to said substrate ... a liquid-crystalline composition ..., and ii) applying at least one further non-liquid-crystalline print or at least one further non-liquid-crystalline coating". Because Poetsch fails to suggest the

independent Claim 66 feature of a *multilayer* structure including a liquid-crystalline layer and a non-liquid-crystalline layer, Poetsch fails to anticipate independent Claim 66.

Furthermore, with respect to independent Claim 75, Poetsch fails to suggest the limitations of a "liquid-crystalline composition comprising A) a liquid-crystalline mixture ... B) further additives ... , and C) if desired, further additives ... , and D) if desired, further additives ... , and E) if desired, further additives ... , where additives B), C), D) and E) are *dispersed throughout* the liquid-crystalline mixture A)".

The Final Rejection states

Poetsch further discloses that the chiral liquid crystalline polymer material serves as a carrier material for additives such as dyes (abstract). It is understood within the art that such a carrier material fall within the boundaries of having the material "dispersed throughout" or "homogeneous" unless specified. Final Rejection at page 10, lines 1-4.

Pursuant to MPEP § 2144.02 and § 2144.03, Applicants respectfully request that the Examiner provide support for the Final Rejection's assertion that "[i]t is understood within the art that such a carrier material fall within the boundaries of having the material 'dispersed throughout' or 'homogeneous' unless specified".

In any event, the Poetsch abstract discloses

Described are pigment flakes having a chiral liquid crystalline polymer material, the polymer material serving as a carrier material or being coated onto a carrier material. The **pigment flakes** have at least one **dye** that is **chemically bound** to the **polymer**. Also described are methods of making such pigment flakes and using them in paints, printing inks, spray paints, cosmetic products, colored plastic, optical elements and security applications. Poetsch at abstract.

Thus, Poetsch discloses liquid crystalline flakes serving as carrier material by carrying dye chemically bound to the exterior of the flakes.

However, Poetsch fails to suggest that the dye is homogeneously dispersed throughout the interior of the liquid crystalline flakes. Because Poetsch fails to disclose the independent

Claim 75 limitation that "additives B), C), D) and E) are *dispersed throughout* the liquid-crystalline mixture A)", Poetsch fails to anticipate independent Claim 75.

Because Poetsch fails to anticipate independent Claims 66 and 75, the rejection over Poetsch should be withdrawn.

Claims 69 and 80 are rejected under 35 U.S.C. § 103(a) over Parri in view of Beck.

Because neither Parri nor Beck suggests the independent Claim 66 feature of a *multilayer* structure including a liquid-crystalline layer and a non-liquid-crystalline layer, Parri in view of Beck fails to suggest independent Claim 66, and Claim 69 which depends from Claim 66.

As discussed above, Parri fails to suggest independent Claim 75's chiral compound A2. Beck fails to remedy the deficiencies of Parri, because there is no reasonable expectation that the skilled artisan would have successfully combined the printing or coating composition of Beck with the chiral dopants of Parri to reach the liquid-crystalline composition of independent Claim 75. Because Parri in view of Beck fails to have rendered obvious independent Claim 75, and Claim 80 depends from independent Claim 75, Parri in view of Beck fails to have rendered obvious Claim 80.

Because Parri in view of Beck fails to have rendered obvious Claims 69 and 80, the rejection over Parri in view of Beck should be withdrawn.

Applicants respectfully request that the Examiner provide a statement indicating that the references in the International Search Report filed August 10, 2001, have been considered.

In view of the foregoing remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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